



Centers for Disease Control and Prevention **H1N1 Flu**
Your Online Source for Credible Health Information

Guidelines for the Submission of Tissue Specimens for the Pathologic Evaluation of Influenza Virus Infections

May 23, 2009 11:30 AM ET

This guidance has been updated to refine the specimen sampling recommendations and to provide more detailed shipping instructions.

Important Note: Advance consultation is required for the submission of all cases. Please use the contact information provided below:

Centers for Disease Control and Prevention

Coordinating Center for Infectious Diseases

National Centers for Zoonotic, Vector-Borne & Enteric Diseases

Division of Viral & Rickettsial Diseases

Infectious Diseases Pathology Branch

pathology@cdc.gov (mailto:pathology@cdc.gov)

Phone: (404) 639-3133

Fax: (404) 639-3043

Viral antigens and nucleic acids may be focal and sparsely distributed in patients with influenza. Extensive sampling of both upper and lower airway ensures the best chance of detecting the virus by immunohistochemical stains, PCR tests and culture.

Collection of tissue specimens:

The preferred specimens would be fresh frozen and wet fixed tissue specimens representing extensive samples from the following pulmonary sites in addition to specimens from other organs showing pathology.

1. Central (hilar) lung with segmental bronchi, right and left primary bronchi, trachea (proximal and distal)
2. Representative pulmonary parenchyma from right and left lung
3. For patients with suspected myocarditis, encephalitis, rhabdomyolysis or gastrointestinal symptoms, specimens should include myocardium (right and left ventricle), CNS (cerebral cortex, basal ganglia, pons, medulla, and cerebellum), skeletal muscle and gastrointestinal tract, respectively.
4. Specimens should be included from any other organ showing significant gross or microscopic pathology.

Submission of specimens:

1. **Wet tissue:** Multiple 1 x 2 cm pieces of tissue from sites listed above in 10% neutral buffered formalin
2. **Fresh-frozen tissue:** (sent **separately** on dry ice) Single piece of tissue as listed above
3. **Paraffin-embedded tissue blocks:** Blocks can be submitted in addition to wet and fresh-frozen and is the preferred specimen to submit in cases where tissues have been in formalin for a significant time. Prolonged fixation (>2 weeks) may interfere with some immunohistochemical and molecular diagnostic assays.

REQUIRED supporting electronic or hard-copy documentation:

1. The full name, title, complete mailing address, e-mail address, phone and fax numbers of the submitter(s). (**This is whom will receive a copy of the final report**)
2. A brief clinical history
3. Copy of the preliminary or final pathology report including, if available, digital photos of gross specimens
4. Copy of any pertinent laboratory reports (including rapid antigen, culture, and PCR test results)

General Guidelines for Packaging
and Shipping Pathology Specimens §

Room Temperature	Frozen (dry-ice¥)
Formalin-fixed wet tissues. Formalin-fixed paraffin-embedded blocks.*	Fresh frozen tissue.

§Shipping Considerations:

- Domestic packages should preferably be shipped Monday-Thursday for receipt by Friday.
- In certain priority cases and with advance consultation, arrangements can be made for receipt of packages on Saturday.
- **Please provide us (via email to pathology@cdc.gov) with the shipper’s package tracking number(s) as soon as available** so that proper receipt and processing of the specimens can occur. A shipment inventory is also appreciated and can follow the email notification of the tracking information.
- International packages should also be shipped as above for domestic packages and will require an import permit. This permit can be provided following consultation.
- U.S. Federal holidays should be taken into consideration before shipping the packages. Exceptions can be made on urgent cases with prior approval.
- See packing instructions below. Specific regulations for packaging, labeling, and shipping may be found at these websites: **SPECIMENS: Shipping/Packing** (<http://www.cdc.gov/ncidod/srp/specimens/shipping-packing.html>) , **IATA Cargo** (http://www.iata.org/whatwedo/cargo/dangerous_goods/infectious_substances.htm) (#linkPolicy) **External Web Site Policy.** (<http://www.cdc.gov/h1n1flu/tissuesubmission.htm#linkPolicy#linkPolicy>) , and **World Health Organization** (http://www.who.int/csr/resources/publications/biosafety/WHO_HSE_EPR_2008_10/en/index.html) (#linkPolicy) .

* During the warmer months (June-Aug), in order to prevent the melting of paraffin-embedded tissue blocks during transit, it is advisable to ship the block(s) with a frozen gel ice-pack.

¥ When shipping frozen specimens from long distances or from international locations, it is best to use a combination of dry-ice and frozen gel ice-packs. The gel ice-packs will remain frozen for a day or two after the dry-ice has dissipated.

PACKING DIAGNOSTIC SPECIMENS FOR TRANSPORT

Primary packaging

- Primary container must be water tight, seal screw top containers with adhesive tape, parafilm, or something similar is acceptable.
- The total volume of liquid or weight of primary containers must not exceed 4L (liquids) or 4 kg (solids). Individual primary containers cannot contain more than 1L liquids.
- Wrap primary containers individually in sealable plastic bags (e.g. Ziploc) with absorbent material to prevent breakage or in case of damage.

Secondary packaging

- Use additional and sufficient absorbent material around the primary packaging in the secondary packaging to absorb the entire contents of all primary containers in case of leakage or damage.
- Secondary packaging must meet the IATA packaging requirements for diagnostic specimens including 1.2 meter (3.9 feet) drop test procedure.
- Must be large enough for all markings, labels, and shipping documents (e.g., air waybill).
- Both dry ice and cold packs must be placed inside insulated packaging, for example Styrofoam box. Outer packaging will be necessary for such packages, see below.
- Dry ice: packaging must permit the release of carbon dioxide gas and not allow a build-up of pressure that could rupture the packaging. **Must place Class 9 diamond label and UN 1845 Carbon dioxide, solid (Dry ice) marking along with the weight of the dry ice in kilograms on exterior of package.**
- Cold packs must be leak-proof.

Outer packaging

- An overpack must be used if cold packs or dry ice is used OR if the secondary packaging is not large enough for all the labels, markings, and documents.
- If shipping/mailling through the US Postal System, the weight of the dry ice cannot exceed 5 pounds. If shipping via courier or airline, the weight of the dry ice per outer packaging cannot exceed 200 kg (approx 400 pounds). For overnight shipments use a minimum of 6 kg / 12 pounds of dry ice. For international shipments, add 3 kg / 6 pounds per day expected to be in transit.
- An itemized list of contents must be enclosed just inside the outermost packaging layer. Place in a sealed plastic bag to protect from moisture.
- Each package and the air waybill must be marked with the following text:
 - The name, address, and telephone number of the responsible person submitting must be on the package and the air waybill.
 - All specimens should be addressed to:

Infectious Diseases Pathology Branch (IDPB)
Centers for Disease Control and Prevention (CDC)
1600 Clifton Road, N.E.
MS: G32 (Bldg. 18/Rm. SB130)
Atlanta, GA 30333
404-639-3133

- The package must be labeled as “BIOLOGICAL SUBSTANCE, CATEGORY B” and “UN 3373” in the “Nature and Quantity of Goods” box on the air waybill and outer packaging.

- Links to non-federal organizations are provided solely as a service to our users. These links do not constitute an endorsement of these organizations or their programs by CDC or the federal government, and none should be inferred. CDC is not responsible for the content of the individual organization Web pages found at these links.

File Formats Help:



[How do you view different file formats\(PDF, DOC, PPT, MPEG\) on this site?](#)

Page last reviewed May 23, 2009 11:30 AM ET
Page last updated May 23, 2009 11:30 AM ET
Content source: [Centers for Disease Control and Prevention](#)

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, 24 Hours/Every Day - cdcinfo@cdc.gov

